

RACIAL/ETHNIC DISPARITIES IN AIR POLLUTION EXPOSURE AND ASTHMA OUTCOMES

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Background and Aims: In the U.S. asthma disproportionately affects those with low socioeconomic status, such as racial/ethnic minorities. For example African Americans often have higher emergency department visits for asthma than whites. Using California Health Interview Survey (CHIS) data, which is representative of California's non-institutionalized population, we aim to determine whether racial and ethnic minorities have higher air pollution exposures and whether air pollution exposures might contribute to disparities in asthma outcomes.

Methods: We mapped CHIS 2003 residential addresses for all respondents and calculated criteria air pollutant and traffic density exposures for each respondent using statewide traffic and air monitoring data. We examined levels of pollution exposure and prevalence of asthma outcomes such as emergency department (ED) visits, daily/weekly asthma symptoms, and daily medication by race and ethnicity. We also ran logistic regression models to test for associations between air pollutant measures and asthma outcomes while controlling for other potential confounders.

Results: Rates of ED visits were higher for Hispanic and African-American children and adults than whites. African American adults and all minority children except Asians are more likely to take daily medication to control their asthma. Mean traffic density appears to be higher for Hispanic, African American, Asian, and multi-race children and adults than white children and adults. Annual average pollutant exposures for traffic-related pollutants, such as NO₂ and PM, appear to be higher for minorities than whites. Additionally, higher pollutant exposures, such as higher traffic density near homes, increase the odds of ER visits after adjusting for age, gender, race/ethnicity and income level.

Conclusions: In California's population racial/ethnic minorities are more highly exposed to air pollution and traffic, which may help explain the disparities found in asthma outcomes. Efforts to reduce pollutant exposures in low socioeconomic communities may help address existing asthma disparities.